WHAT IS CLAIMED IS:

1. A microscope comprising:
   - at least one specimen support unit associated with a specimen, and
   - at least one reference specimen of known configuration, wherein the reference specimen being detectable by light microscopy for calibration, alignment, and adjustment of the microscope.

2. The microscope as defined in Claim 1 wherein the microscope is a confocal scanning microscope.

3. The microscope as defined in Claim 1 wherein the microscope is a double confocal scanning microscope.

4. The microscope as defined in Claim 1, wherein the specimen support unit is fabricated from glass.

5. The microscope as defined in Claim 4, wherein the specimen support unit has at least one planar area configured as the reference specimen or the specimen support unit is configured as a specimen slide or a cover glass is affixed onto the specimen support unit and has at least one planar area configured as the reference specimen.

6. The microscope as defined in Claim 5, wherein the planar area possesses a texture or a structure.

7. The microscope as defined in Claim 5, wherein the planar area possesses a coating or a holographic impression.

8. The microscope as defined in Claim 7, wherein the coating is of reflective or luminescent configuration.

9. The microscope as defined in Claim 6, wherein the texture or structure of the planar area is of asymmetrical configuration.

10. The microscope as defined in Claim 1, wherein at least one microscopic object that is provided on the specimen support unit as the reference specimen.

11. The microscope as defined in Claim 10, wherein beads or nanocrystals are provided as microscopic object.

12. The microscope as defined in Claim 11, wherein multiple microscopic objects are stochastically distributed.

13. A method for operating a microscope, comprising the following steps:
- providing at least one specimen support unit being associated with a specimen,
- detecting at least one reference specimen of known configuration, and
- calibrating, aligning or adjusting the microscope on the basis of the detection by light microscopy.

14. The method as defined in Claim 13, wherein the reference specimen is detected by an image acquisition, thereby making possible an unequivocal association of the position and orientation of the reference specimen.

15. The method as defined in Claim 13, wherein the microscope is a confocal scanning microscope.

16. The method as defined in Claim 15 wherein the reference specimen is detected by a scanning operation, thereby making possible an unequivocal association of the position and orientation of the reference specimen.

17. The method as defined in Claim 16 wherein a two-dimensional optical section is performed as the scanning operation and the optical section is oriented perpendicular to the planar area.

18. The method as defined in Claim 13, wherein the microscope is a double confocal scanning microscope.

19. The method as defined in Claim 18 wherein the reference specimen is detected by a scanning operation, thereby making possible an unequivocal association of the position and orientation of the reference specimen.

20. The method as defined in Claim 19 wherein a two-dimensional optical section is performed as the scanning operation and the optical section is oriented perpendicular to the planar area.

21. The method as defined in Claim 13, wherein the image data of the reference specimen are evaluated in computer-assisted fashion.

22. The method as defined in Claim 13, wherein on the basis of the detected image data of the reference specimen, conclusions are drawn as to its position or orientation relative to the detected specimen region.

23. The method as defined in Claim 13, wherein by comparing detected image data of the reference specimen to previously detected image data, conclusions are drawn as to the drift of the specimen or the specimen support unit.

24. The method as defined in Claim 23, wherein a drift of the specimen is compensated for by a corresponding motion of the specimen support unit.

25. The method as defined in Claim 23, wherein a drift of the specimen is compensated for using methods of digital image processing.

26. The method as defined in Claim 18, wherein on the basis of the detection of the reference specimen, optical beam path segments, in particular their path length differences, and the positions of the objectives are calibrated and aligned.

27. The method as defined in Claim 13, wherein for automatic location or focusing of the specimen, the specimen support unit together with the specimen is moved along the optical axis of the objective or objectives, and in that context the light coming from the planar area is detected.